

AMENDMENTS TO THE CLAIMS

1. (amended) An image recognition device, for detecting arbitrary images, comprising:

an element matching means arranged and configured to match each of a plurality of input pattern elements obtained from an input image with corresponding target pattern elements obtained from by dividing a target imagepattern into a plurality of regions; and

a pattern detection means arranged and configured to detect relative positions of said plurality of input pattern elements compared with a multiple magnification reference arrangement data of each of said target pattern elements in order to recognize whether said input image includes said target imagepattern by comparing position data of pattern elements output by said element matching means with multiple magnification reference arrangement data of each of said target pattern elements;

wherein said multiple magnification reference arrangement data corresponds to magnification levels no greater than a level at which a human eye can distinguish between an original and a non-zero magnification of the original.

2. (amended) An image recognition device, for detecting arbitrary images, comprising:

a dictionary generating unit arranged and configured to store dictionary data for each of a plurality of target pattern elements obtained ~~from~~by dividing a target pattern;

an element matching unit arranged and configured to compare and match input image pattern data against said dictionary data stored in said dictionary generating unit;

an arrangement data generating unit which stores position data representing an arrangement of each of the target pattern elements at a plurality of magnifications, each of said plurality of magnifications being no greater than a level where a human eye can distinguish between an original and a non-zero magnification of the original; and

a pattern detection unit which, based on the output of said element matching unit and said position data from said arrangement data generating unit, determines whether said target pattern can be found in said input image pattern data.

3. (original) The image recognition device of claim 2, wherein said dictionary generating unit comprises a software routine.

4. (original) The image recognition device of claim 2, wherein said element matching unit comprises a software routine.

5. (original) The image recognition device of claim 2, wherein said arrangement data generating unit comprises a software routine.

6. (original) The image recognition device of claim 2, wherein said pattern detection unit comprises a software routine.

7. (amended) An image processing device, ~~for detecting arbitrary images at multiple magnification levels each below a threshold where said magnification can be readily identified by a human eye as a non-zero magnified version of an original,~~ the device comprising:

~~an element matching means to match a plurality of input pattern elements obtained by dividing an input image into a plurality of regions with the corresponding target pattern elements of said non-circular area obtained by dividing target pattern into a plurality of regions;~~

~~a pattern detection means to detect relative positions of said plurality of input pattern elements compared with a reference arrangement data, at said multiple magnifications, of each of said target pattern elements in order to recognize whether said input image includes said target pattern by comparing position data of pattern elements output by said element matching means with multiple magnification reference arrangement data of each of said target pattern elements,~~

wherein said multiple magnification reference arrangement data corresponds to magnification levels no greater than a level at which a human eye can distinguish between an original and a non-zero magnification of the original; and

a control means to control output of said input image to an output device when said pattern detection means recognizes said input image includes said target pattern.

8. (original) The image processing device of claim 7, wherein said output device comprises a printer.

9. (original) The image processing device of claim 7 further comprising a scanner to input said input image into said image processing device.

10. (original) The image processing device of claim 7 further comprising a digital camera to input said input image into said image processing device.

11. (original) The image processing device of claim 7 further comprising a floppy disc to input said input image into said image processing device.

12. (original) The image processing device of claim 7 further comprises a personal computer to facilitate copying of said input image.

13. (amended) A recording medium containing computer code for implementing an image recognition method for detecting arbitrary images said recording medium comprising:

a storage area having stored thereon a computer code, said computer code comprising:

an element matching means arranged and configured to match ~~a plurality of input pattern elements obtained by dividing an input image into a plurality of regions with corresponding target pattern elements of obtained by dividing a target pattern into a plurality of regions;~~ and

a pattern detection means executable by said computer causes said computer to ~~detect relative positions of said plurality of input pattern elements compared with a multiple magnification reference arrangement data of each of said target pattern elements in order to recognize whether said input image includes said target pattern by comparing position data of pattern elements output by said element matching means with multiple magnification reference arrangement data of each of said target pattern elements;~~

wherein said multiple magnification reference arrangement data corresponds to magnification levels no greater than a level where a human eye can distinguish between an original and a non-zero magnification of said original.

14. (amended) A method of processing image, said method comprising:

~~inputting a reference image, said reference image being an arbitrary image;~~

~~dividing said a reference image into a plurality of target pattern elements, said reference image being an arbitrary image;~~

determining reference arrangement data for each of said target pattern elements at a plurality of magnifications, said plurality of magnifications being no greater than a level where a human eye can distinguish between an original and a non-zero magnification of said original;

inputting data for an input image;

~~dividing said input image into a plurality of input elements corresponding to said target pattern elements of said reference image; and~~

~~comparing said target pattern elements and said input elements.~~

matching said input image with said target pattern elements to determine whether said target pattern elements can be found in said input image;

comparing position data of pattern elements found in said matching with said reference arrangement data to determine whether said input image includes said reference image.

15. (canceled).

16. (previously presented) The method of claim 14, further comprising halting if said target pattern elements include said input elements based on said comparing.

17. (original) The method of claim 14 further comprising changing the color of a reproduction of said input image if said target pattern elements include said input elements based on said comparing.

18. (original) The method of claim 14 further comprising reducing the resolution of a reproduction of said input image if said target pattern elements include said input elements based on said comparing.

19. (original) The method of claim 14 further comprising superimposing an alphanumeric character on top of a reproduction of said input image if said target pattern elements include said input elements based on said comparing.

20. (previously presented) The image recognition device of claim 1, wherein each of said multiple magnification reference arrangement data corresponds to a magnification level no greater approximately 15%.

21. (previously presented) The image recognition device of claim 2, wherein each of said plurality of magnifications is no greater than approximately 15%.

22. (amended) The image processing device of claim 7, wherein ~~said threshold each of said plurality of magnifications is each of said multiple magnification reference arrangement data corresponds to a magnification level~~ no greater than approximately 15%.

23. (previously presented) The recording medium of claim 13, wherein each of said multiple magnification reference arrangement data corresponds to a magnification level no greater than approximately 15%.

24. (previously presented) The method of claim 14, wherein each of said plurality of magnifications is no greater than approximately 15%